

***Conservation Assessment  
for  
Six-Whorled Vertigo (*Vertigo morsei*)***



***USDA Forest Service, Eastern Region***

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*This Conservation Assessment was prepared to compile the published and unpublished information on the subject taxon or community; or this document was prepared by another organization and provides information to serve as a Conservation Assessment for the Eastern Region of the Forest Service. It does not represent a management decision by the U.S. Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject taxon, please contact the Eastern Region of the Forest Service - Threatened and Endangered Species Program at 310 Wisconsin Avenue, Suite 580 Milwaukee, Wisconsin 53203.*

## Table of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>4</b>
<b>NOMENCLATURE AND TAXONOMY .....</b>	<b>5</b>
<b>DESCRIPTION OF SPECIES.....</b>	<b>5</b>
<b>LIFE HISTORY .....</b>	<b>5</b>
<b>HABITAT.....</b>	<b>5</b>
<b>DISTRIBUTION AND ABUNDANCE .....</b>	<b>5</b>
<b>POPULATION BIOLOGY AND VIABILITY .....</b>	<b>8</b>
<b>POTENTIAL THREATS AND MONITORING.....</b>	<b>8</b>
<b>SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION .....</b>	<b>9</b>
<b>SUMMARY OF EXISTING MANAGEMENT ACTIVITIES .....</b>	<b>9</b>
<b>PAST AND CURRENT CONSERVATION ACTIVITIES.....</b>	<b>9</b>
<b>RESEARCH AND MONITORING .....</b>	<b>9</b>
<b>REFERENCES .....</b>	<b>10</b>
<b>LIST OF CONTACTS .....</b>	<b>11</b>

## EXECUTIVE SUMMARY

This is a draft Conservation Assessment providing a summary of readily available information on the distribution, ecology, habitat and population biology of *Vertigo morsei*, a terrestrial snail, in the Great Lake States. This document was compiled to assist in writing of the Conservation Assessment for the Niagara Escarpment Community.

*Vertigo morsei* and eight additional species including *Vertigo paradoxa* and *Catinella exile* are among the most restricted animal taxa in North America and have been recommended for Federal Endangered Species

Protection (Frest 1991, Nekola 1997). Based on the fragility and rarity of its required habitat, Nekola 1998b suggests this snail should be granted Michigan Endangered Species status.

*Vertigo morsei* is a species of calcareous open wetlands and fens (Sjogren 2000). One of the two occurrences of *V. morsei* on the Hiawatha National Forest may be the second largest population of this species in the world (Nekola 1998b).

Generally, threats to this and other land snails include disturbances to hydrology from highway corridors, railroad right-of-ways and other disturbances (Nekola 1998b). Generally, sites providing habitat for land snail communities are being lost to development, agriculture and forestry management (Frest 1991, Nekola and Frest 1996, Nekola 1998b). In areas with a population of land snails, forest clearing has negative impacts by increasing chances of land snail desiccation and clearing may alter groundwater flow (Nekola 1998a). Threats also include ATV use (Nekola 1998b).

Research needs are population viability and life history of this species.

There is very little information published on this species. *Vertigo morsei* is not listed on any State Threatened and Endangered List in the Great Lakes Region.

## ACKNOWLEDGEMENTS

Information was provided by the following individuals: Dr. Michael Hoggarth, Associate Professor and Chair, Department of Life and Earth Sciences, Otterbein College, Westerville, Ohio; Dave Cuthrell, Associate Program Leader Zoology, Michigan Natural Features Inventory; Daryl Howell, State of Iowa, Department of Natural Resources. Laura Hutchinson, Library Services Leader, North Central Research Station in St. Paul Minnesota conducted a literature search on this species. Julie Williams compiled the State Endangered, Threatened and Sensitive Species lists for the majority of the states within the continental U.S. and Canadian provinces.

## NOMENCLATURE AND TAXONOMY

**Scientific name:** *Vertigo morsei* (Sterki 1894)

**Subspecies:**

**Common name:** Six-whorled Vertigo

**Order:** Stylommatophora

**Family:** Pupillidae

**Synonym (s):** No synonyms.

## DESCRIPTION OF SPECIES

The shell length of this species is 2.7 mm (Nekola 1998b).

## LIFE HISTORY

Not documented.

## HABITAT

In wet areas in association with margins of ponds and marshes (M. Hoggarth, personal communication 2001), Upper Midwest calcareous wetlands (Sjogren 2000). Since 1986, 5 occurrences have been found in calcareous fen habitat in Wisconsin and Iowa (Nekola and Frest 1996, Nekola 1998b). In Mackinac County this species was found by Nekola (1998b) at calcareous fens with organic-rich soil overlaying marl.

## DISTRIBUTION AND ABUNDANCE

*Vertigo morsei* is known from 21 counties in the United States, and one in Ontario (Nekola 1998b). This species is distributed across New York, New Jersey, Indiana and Illinois (M. Hoggarth personal communication 2001, Nekola 1998b), Michigan (NatureServe 2000, M. Hoggarth personal communication 2001, Nekola 1998b), Wisconsin (NatureServe 2000), and Minnesota (Nekola 1998b). It has also been collected in Ohio (M. Hoggarth personal communication 2001, Nekola 1998b). Pleistocene fossils of this species have been found in association with *Hendersonia occulta* and *Discus macclintockii* in Illinois (Nekola 1998b).

## Status in the Great Lakes Region

**Table 1.** *State Ranks for Vertigo morsei*

State	State Threatened/Endangered or Special Concern Listing	State/Province Heritage Status Ranks
<b>Illinois</b>	Not listed as T/E or Special Concern	Not ranked
<b>Indiana</b>	Not listed as T/E or Special Concern	Not ranked
<b>Michigan</b>	Not listed as T/E or Special Concern	S2, suggested Michigan status is endangered (Nekola 1998b).
<b>Minnesota</b>	Not listed as T/E or Special Concern	Not ranked
<b>New York</b>	Not listed as T/E or Special Concern	Not ranked
<b>Ohio</b>	Not listed as T/E or Special Concern	Recommended state endangered species (M. Hoggarth personal communication 2001).
<b>Ontario</b>	Not listed as T/E or Special Concern	S1
<b>Pennsylvania</b>	Not listed as T/E or Special Concern	Not ranked
<b>Wisconsin</b>	Not listed as T/E or Special Concern	S1, suggested status state endangered (Nekola 1996)

**State Ranks:** S1=critically imperiled; extreme rarity or because of some factor of its biology making it especially vulnerable to extirpation from the state. Typically 5 or fewer occurrences or very few remaining individuals (<1,000). S2= Imperiled: rarity or because of other factors making it very vulnerable to extirpation from the state. Typically 6 to 20 occurrences or few remaining individuals (1,000-3,000).

The global rank for G2G3, the rounded global rank is G2 ( NatureServe Explorer 2002). G2= imperiled globally because of rarity ( 6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range. G3=rare to uncommon; usually between 20 to 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. G2G3 means the ranking is between G2 and G3.

There are no other states, that status information was collected which list this species. State status information was not located for Alaska, Florida, Georgia, Idaho, Kansas, Kentucky, Maine, Maryland, New Hampshire, New Jersey, North Carolina, Rhode Island, Tennessee, Texas and West Virginia.

**Table 2.** *Vertigo morsei* Occurrence in the Great Lake States by County, State and Year\*

State	County of Occurrence	Number of Occurrences and Year
<b>Illinois</b>	1 county (Nekola and Frest 1996)	Not tracked by Natural Heritage in this state.
<b>Indiana</b>	3 counties, <i>Marshall, ___ and ___ counties</i> (Nekola and Frest 1996)	Not tracked by Natural Heritage in this state.
<b>Michigan</b>	Cass County Calhoun County Chippewa County Eaton County Kent County Kalamazoo County Livingston County Mackinac County  Montmorency County Oakland County	<i>Need number of occurrences and year of occurrence for Cass-Livingston Counties and Montmorency-Oakland County (map Nekola and Frest 1996)</i>  2 occurrences (Nekola 1998b) This species is not tracked by Michigan Natural Features Inventory.
<b>Minnesota</b>	1 county (Nekola and Frest 1996)	Not tracked by Natural Heritage in this state.
<b>New York</b>	2-3 counties (Nekola and Frest 1996)	Not tracked by Natural Heritage in this state.
<b>Ohio</b>	3 occurrences in the northern part of the state (M. Hoggarth personal communication 2001), 2 counties (Nekola and Frest 1996).	Not tracked by Natural Heritage in this state.
<b>Ontario</b>	Not tracked by Natural Heritage in this province.	
<b>Pennsylvania</b>	Not tracked by Natural Heritage in this state.	
<b>Wisconsin</b>	Door County  Waushara County	1 occurrence, largest density of this species known in the world (Nekola 1996). Not tracked by Natural Heritage in this state. NatureServe 2002

County occurrence information from Michigan Natural Features Inventory, Michigan County Element List-September 1999, Wisconsin Natural Heritage Program, Rare Species and Natural Communities, NHI Working List by County, Indiana Natural Heritage Data Center, List of Endangered, Threatened, and Rare Species by County, November 16, 1999, Ontario Natural Heritage Information Centre, Rare Species Query by County query ran 1/9/01.

This species is also known in two counties in Iowa (Nekola and Frest 1996).

## POPULATION BIOLOGY AND VIABILITY

Not documented.

## POTENTIAL THREATS AND MONITORING

### Present or Threatened Risks to Habitat or Range

Generally, threats to this and other land snails include anthropogenic (highway corridors, railroad right-of-ways) and other disturbances (Nekola 1998b). Generally, sites providing habitat for land snail communities are being lost to development, agriculture and forestry management (Frest 1991, Nekola and Frest 1996, Nekola 1998b). In areas with a population of land snails, forest clearing has negative impacts as well as any activities that may alter groundwater flow (Nekola 1998a) and will change the microclimate increasing chances of land snails desiccation (Nekola 1998b). Threats also include ATV use (Nekola 1998b).

Threats listed for other *Vertigo* spp. which may also threaten this species include filling of upland sinkholes with soil or trash, discharge of agricultural pollutants, road building, quarrying, rock climbing or spelunking (Frest 1991).

**Table 3** *Threats or Risks to Vertigo morsei and Its Habitat by Forest*

Forest	Risk or Threat
<b>Chequamegon-Nicolet</b>	Not on RF Sensitive Species list for the Cheq-Nicolet.
<b>Chippewa</b>	Not on RF Sensitive Species list for the Chippewa.
<b>Hiawatha</b>	One site is protected by candidate RNA status but may be impacted by altered hydrology from a State highway corridor. The other site is near a wilderness boundary but is currently being disturbed by ATV use.
<b>Huron-Manistee</b>	Not on RF Sensitive Species list for the Huron-Manistee.
<b>Ottawa</b>	Not on RF Sensitive Species list for the Ottawa.
<b>Superior</b>	Not on RF Sensitive Species list for the Superior.

### Commercial, Recreational, Scientific or Educational Overutilization

Collecting and research pressures on the more fragile sites has been listed by Frest (1991) for other species of *Vertigo*.



### **Disease or Predation**

Not known. These snails are too small to be preyed upon by mammalian predators (D. Cuthrell, personal communication 2001).

### **Inadequacy of Existing Regulatory Mechanisms**

Not documented.

### **Other Natural or Human Factors Affecting Continued Existence of Species**

Not documented.

## **SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION**

The two occurrences of this species found during Nekola's 1998 inventory within the National Forest boundary are 100% Forest Service ownership. One is along the boundary of a wilderness area but ORV use is threatening the site. The other site may have its hydrology impacted by a State highway (Nekola 1998b). Ownership was not recorded at all sites.

## **SUMMARY OF EXISTING MANAGEMENT ACTIVITIES**

None known.

## **PAST AND CURRENT CONSERVATION ACTIVITIES**

None known.

## **RESEARCH AND MONITORING**

### **Existing Surveys, Monitoring and Research**

Dr. Jeffery Nekola, University of Wisconsin Green Bay conducted a study: Terrestrial Gastropod Inventory of the Niagaran Escarpment and Keweenaw Volcanic Belt in Michigan's Upper Peninsula in 1998 and Land Snails of Door Peninsula Natural Habitats, Final Report Wisconsin Chapter, The Nature Conservancy in 1996. A query was run at North Central Research station library and at the National Biological Information Infrastructure database at <http://search.usgs.gov/nbii/query> with no positive results.

### **Survey Protocol**

Samples are collected from various habitats, larger land snails are collected by hand and placed in plastic snap vials. Four liter litter samples are used to collect smaller taxa. At woodland sites, concentrate collections at places of abundance of larger snails, along the base of cliffs, rocks, trees, soil covering ledges or at microclimates such as cold air vents on a cliff face. In open sites collect small blocks of turf (ca 125 cm<sup>3</sup>) or loose soil and leaf litter accumulations under or adjacent to cobbles, boulders or shrubs (Nekola 1998b) or from hummock sides, undisturbed places or swales (Nekola and Frest 1996). Samples could also be taken under shrubs (Nekola and

Frest 1996). At the lab, use a low-temperature soil oven to slowly and completely dry the samples. Once dry, soak the samples in water for 3-24 hours and sieve. Use a neutral-brown background, binocular microscope and sable brush to separate shells for identification (Nekola 1998b).

## **Research Priorities**

Life history and population biology of the species.

## **REFERENCES**

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